

What is claimed is:

1. A belt cleaning system comprising:
  - a cleaning blade for being biased into scraping engagement with a conveyor belt;
  - a first resilient mount for the cleaning blade that allows the blade to shift away from the belt;
  - a second resilient mount secured to the first mount that allows the blade to shift away from the belt;
  - a support to which the second resilient mount is mounted;
  - a third resilient mount secured to the support for allowing the blade to shift away from the belt; and
  - a fourth resilient mount secured to the third mount that allows the blade to shift away from the belt with the resilient mounts cooperating to provide four distinct mounts that absorb energy of impacts on the blade during conveyor belt operation with the blade shifting away from the belt, and provide for controlled release of the impact energy to minimize impact force of the blade against the belt.
2. The belt cleaning system of claim 1 wherein the cleaning blade and the first and second resilient mounts comprise a plurality of cleaning blades and associated first and second resilient mounts extending across the conveyor belt.
3. The belt cleaning system of claim 1 including an elongate support extending across the conveyor belt and including opposite ends at which the third and fourth resilient mounts are disposed.

4. The belt cleaning system of claim 1 wherein the cleaning blade is directly secured to the first resilient mount which is directly secured to the second resilient mount, and

an elongate support extending across the conveyor belt and including opposite ends with the second resilient mount directly secured to the support intermediate the ends thereof, and the third and fourth resilient mounts disposed at the ends of the support.

5. The belt cleaning system of claim 4 wherein the third and fourth resilient mounts are operably secured to the support ends to allow the support to resilient shift along with the second resilient mount and the first resilient mount secured thereto.

6. The belt cleaning system of claim 1 wherein the first resilient mount comprises a spring plate having an upper end to which the cleaning blade is attached.

7. The belt cleaning system of claim 1 wherein the second resilient mount comprises a torsion bias mechanism.

8. The belt cleaning system of claim 3 wherein the third resilient mount comprises a torsion bias mechanism allowing for resilient rotary shifting of the support and the fourth resilient mount comprises a vertical bias mechanism allowing for resilient vertical shifting of the support.

9. The belt cleaning system of claim 1 wherein the first resilient mount comprises a spring plate to which the cleaning blade is attached and the second resilient mount comprises a torsion bias mechanism including an outer member and an inner member fixed relative to the outer member and extending therein and resilient material disposed between the inner and outer members for allowing resilient shifting of the outer member with the spring plate being attached to the outer member.
10. The belt cleaning system of claim 9 wherein the first and second resilient mounts include a stop therebetween to limit shifting of the spring plate relative to the outer member of the torsion bias mechanism.
11. The belt cleaning system of claim 1 wherein the cleaning blade is a distinct member from the first resilient mount.
12. A secondary belt cleaning system for cleaning a conveyor belt running in a belt travel direction between conveyor pulleys, the secondary belt cleaner system comprising:
  - an elongate support having opposite ends and extending under the conveyor belt transverse to the belt travel direction;
  - a plurality of side-by-side aligned cleaning blades biased into scraping engagement with the belt;
  - a pair of resilient mounts for each of the cleaning blades disposed under the belt operably secured to the support with the resilient mounts allowing the blade to shift horizontally in the belt travel direction and vertically down away from the belt due to impacts therewith during conveyor belt operations; and
  - resilient biasing mechanisms at the ends of the support out from under the conveyor belt that allows for both rotary and vertical resilient shifting of the support.

13. The secondary belt cleaning system of claim 12 wherein the pair of resilient mounts include an angled spring plate member having a layback portion including an upper end to which the cleaning blade is secured and extending at a predetermined layback angle toward the belt, and a torsion bias mechanism to which the spring plate member is mounted allowing the spring plate member to resiliently rotate about an axis substantially parallel to the elongate support.

14. The secondary belt cleaning system of claim 13 wherein the torsion bias mechanism is disposed behind the layback portion so that the layback portion serves to protect the torsion bias mechanism from scrapped material from the belt.

15. The secondary belt cleaning system of claim 13 wherein the torsion biasing mechanism includes an inner member, an outer sleeve extending about the inner member and resilient material between the sleeve and the inner member to allow the sleeve to resiliently rotate about the inner member, and the angled spring plate member comprises a lower arcuate portion spaced upstream of the upper end of the layback portion and a flat base portion connected to the arcuate portion and secured to the outer sleeve.

16. The secondary belt cleaning system of claim 15 including a stop between the layback portion and the outer sleeve to limit deflection of the layback portion and for causing resilient rotation of the sleeve.

17. The secondary belt cleaning system of claim 12 wherein the pair of resilient mounts include a stop therebetween so that one of the mounts is limited in an amount of resilient shifting provided to the blade thereby so that only the other mount of the pair generates resilient shifting of the blade.

18. The secondary belt cleaning system of claim 12 wherein the resilient biasing mechanisms comprise a pair of biasing mechanisms at each end of the support with one biasing mechanism allowing for the rotary resilient shifting of the support and the other biasing mechanism allowing for the vertical resilient shifting of the support.